EXHIBIT III-34
NONATTAINMENT AREA CLASSIFICATIONS FOR O_3, CO, AND PM_{10}

Pollutant	Nonattainment Area Classification	Monitored Concentration [a] (ppm)
Ozone (O_3)	Marginal	0.121 up to (but not including) 0.138
	Moderate	0.138 up to (but not including) 0.160
	Serious	0.160 up to (but not including) 0.180
	Severe-15	0.180 up to (but not including) 0.190
	Severe-17	0.190 up to (but not including) 0.280
	Extreme	0.280 and above
Carbon Monoxide (CO)	Moderate-1	9.1-12.7
	Moderate-2	12.8-16.4
	Serious	16.5 and above
Particulate Matter less than 10 microns in diameter (PM_{10})	Moderate	50 ($\mu g/m^3$) [b] (annual averaging period) or 150 ($\mu g/m^3$) [b] (24-hour averaging period) [c]
	Serious	

[a] Concentration of criteria pollutant in ambient air in parts per million.

[b] Measured in micrograms per cubic meter.

[c] The EPA reclassified initial PM_{10} nonattainment areas from moderate-to-serious if the monitoring data did not meet the NAAQS by December 31, 1994.

Source: 40 CFR Part 81 (Air Quality Designations and Classifications, Final Rule).

A major source, as defined in Kansas Administrative Regulations (KAR, Section 28-19-200(kk)) and Missouri regulations (Title 10 CSR 10-6.060) is a stationary source (e.g., power plants, steel mills, factories) which has the potential to emit any of the following: 10 tons per year or more of any hazardous air pollutant; 25 tons per year or more of any combination of such hazardous air pollutants; or 100 tons per year or more of any air pollutant including any major source of fugitive emissions of any such pollutant from a federally designated fugitive emissions source.

EXHIBIT III-35
POLLUTANT STANDARDS INDEX (PSI)
AIR QUALITY LEVELS

PSI Value	Air Quality Description	General Health Effect	Cautionary Statements
From 0 to 50	Good	None for the general population.	None required.
From 50 to 100	Moderate	Few or none for the general population.	None required.
From 100 to 200	Unhealthful	Mild aggravation of symptoms among susceptible people, with irritation symptoms in the healthy population.	Persons with existing heart or respiratory ailments should reduce physical exertion and outdoor activity. General population should reduce vigorous outdoor activity.
From 200 to 300	Very Unhealthful	Significant aggravation of symptoms and decreased exercise tolerance in persons with heart or lung disease; widespread symptoms in the healthy population.	Elderly and persons with existing heart or lung disease should stay indoors and reduce physical activity. General population should avoid vigorous outdoor activity.
Over 300	Hazardous	Early onset of certain diseases in addition to significant aggravation of symptoms and decreased exercise tolerance in healthy person. At PSI levels above 400, premature death of ill and elderly people may result. Healthy people experience adverse symptoms that affect normal activity.	Elderly and persons with existing diseases should stay indoors and avoid physical exertion. At PSI levels above 400, general population should avoid outdoor activity. All people should remain indoors, keeping windows and doors closed, and minimize physical exertion.

Source: U.S. EPA, Office of Air Quality Planning and Standards, AIRS Database, 1997.

b. Existing Air Quality

In order to assess the existing ambient air quality for the Sunflower area, the following EPA air quality data were reviewed for Johnson County and for the Kansas City Ozone Maintenance Area:[2] (1) air quality attainment designation for each criteria pollutant; (2) ambient air monitoring results; and (3) existing emissions inventory data.

2 The Kansas City Air Quality Maintenance Area encompasses Johnson and Wyandotte counties in Kansas and Clay, Jackson, and Platte counties in Missouri.

- **Attainment Designation**

The EPA has classified Johnson County and the four other counties within the Kansas City Ozone Maintenance Area as ozone maintenance areas and as attainment areas for all other criteria pollutants.[3] All counties within the Kansas City Ozone Maintenance Area are subject to their respective State Implementation Plans (SIPs) regulation requirements developed by the KDHE and Missouri Department of Natural Resources (MDNR). The SIP requirements are developed in order to attain and maintain the NAAQS; they are approved by the EPA.

SIP requirements specific to Johnson and Wyandotte counties (O_3 maintenance areas) include rules pertaining to emissions inventory updates, fuel volatility control, and emissions limitations for two power generation stations in Kansas. The Kansas air quality and permitting regulations are published in the Kansas Administrative Regulations, Title 28, Article 19. Similar SIP requirements specific to Clay, Jackson, and Platte counties (also O_3 maintenance areas) are found in Title 10, Chapter 6 of the Missouri Final Regulations.

- **Air Monitoring Results**

The EPA's ambient air monitoring database indicates that two monitoring stations have been employed in Johnson County during the most recent five-year period from 1993 through 1997. Twenty-one additional monitoring stations were in use in the Kansas City Ozone Maintenance Area between 1993 and 1998. No exceedances of the NAAQS for PM_{10} and lead were recorded by the Johnson County monitoring stations during the five-year period. However, ozone standards were exceeded at five monitoring stations in Wyandotte, Clay and Platte counties. Between 1993 and 1998, the maximum number of ozone exceedences at a monitoring station was five, reported at the monitoring station on Highway 33 and County Home Road in Clay County, Missouri. Also, one exceedence of PM_{10} was reported at a monitoring station in Wyandotte County. There were no exceedences for any criteria pollutants in Jackson County. Exhibit III-36 presents a summary of information about the monitoring stations in Johnson County and the Kansas City Ozone Maintenance Area.

Based on the monitoring data collected at these monitoring stations, the EPA developed a Pollutant Standards Index (PSI) report for Johnson County for the five-year period from 1993 through 1997; PSI data were also developed for the Kansas City Ozone Maintenance between 1993 and 1998. A PSI value is an approximate indicator of overall air quality, because it takes into account all of the pollutants measured within a county. Exhibit III-37 presents PSI values with qualitative measures (good, moderate, unhealthful air quality) for Johnson County and the Kansas City Ozone Maintenance Area. Basic statistical information about the PSI data (maximum, 90th percentile, and median PSI values) is also provided for Johnson County as it compares to all other counties in Kansas.

- **Existing Emissions Inventory**

This section presents the existing emissions inventory for the following areas:

- County-wide emissions sources (i.e., all stationary and non-point emissions sources) in Johnson County. Emissions inventory for these sources is based on the 1995 (most recent available) EPA database.

[3] 40 CFR, Part 81.317.

EXHIBIT III-36
AIR QUALITY MONITORS IN ALL COUNTIES IN THE KANSAS CITY OZONE MAINTENANCE AREA

Monitoring Site	Land Use	Location Type	Monitoring Years	Pollutant Monitored	Number of Exceedences of NAAQS [b] during Monitoring Years
Johnson County, Kansas					
85th and Antioch, Overland Park, Kansas	Commercial	Urban/Center City	1993-1997	PM_{10}	0
8715 West 49th South Park School, Merriam, Kansas	Residential	Suburban	1993-1997	Lead	0
Wyandotte County, Kansas					
619 Ann Avenue Wyandotte County Health Department Kansas City, KS	Commercial	Urban/ Center City	1993-1998 1998 1993-1998 1993-1998	CO NO_2 Ozone SO_2	0 0 3 0
420 Kansas Avenue Fire Station #3 Kansas City, KS	Industrial	Urban/ Center City	1993-1997 1993-1998	Lead PM_{10}	0 0
1312 S. 55th St. Turner High School Kansas City, KS	Residential	Suburban	1993	Lead	0
444 Kindelberger Rd. Fairfax, KS	Industrial	Urban/ Center City	1995-1998 1993-1998 1993-1998	NO_2 PM_{10} SO_2	0 1 0
Clay County, Missouri					
2400 Russell Rd. Kansas City, MO	Residential	Suburban	1993	CO	0
2600 NE Parvin Rd. Kansas City, MO	Residential	Suburban	1993-1998	CO	0
49th and Winchester Kansas City, MO	Residential	Suburban	1993-1998 1993-1998 1993-1998	NO_2 Ozone SO_2	0 2 0
Hwy 33 & County Home Rd. Clay County, MO	Agricultural	Rural	1993-1998 1993-1998	NO_2 Ozone	0 5
Watkins Mill Road Clay County, MO	Residential	Rural	1993-1998	Ozone	4
Jackson County, Missouri					
800 Broadway KC Carnival Supplies Kansas City, MO	Commercial	Urban/ Center City	1993-1995	CO	0
9500 E. Bannister Rd. Kansas City, MO	Industrial	Suburban	1993-1994	CO	0
Broadway Kansas City, MO	Commercial	Urban/ Center City	1995-1998	CO	0
7000 Roberts St. Kansas City, MO	Industrial	Suburban	1994-1996 1994-1996	NO_2 PM_{10}	0 0

EXHIBIT III-36 (CONTINUED)
AIR QUALITY MONITORS IN ALL COUNTIES IN THE KANSAS CITY OZONE MAINTENANCE AREA

Monitoring Site	Land Use	Location Type	Monitoring Years	Pollutant Monitored	Number of Exceedences of NAAQS [b] during Monitoring Years
Richards-Gebaur AFB			1993-1998	Ozone	0
Kansas City, MO	Industrial	Rural	1993-1998	PM_{10}	0
1517 Locust St.					
Fires Station #8		Urban/	1993-1998	Lead	0
Kansas City, MO	Commercial	Center City	1993-1998	PM_{10}	0
27th and Van Brunt St.					
Kansas City, MO	Commercial	Suburban	1993-1998	PM_{10}	0
724 Troost (Rear)		Urban/	1994-1996	PM_{10}	0
Kansas City, MO	Commercial	Center City	1993-1998	SO_2	0
Armco/Sludge Station		Urban/			
Kansas City, MO	Commercial	Center City	1994-1996	PM_{10}	0
5130 Duramis Rd.					
Fire Academy		Urban/			
Kansas City, MO	Industrial	Center City	1993-1998	PM_{10}	0
MOPAC RR right-of-way at 39th St.			1993-1997	CO	0
Independence, MO	Commercial	Suburban	1993-1996	PM_{10}	0
Platte County, Missouri					
			1993-1997	NO_2	0
11500 N. 71 Hwy.			1993-1998	Ozone	3
Kansas City, MO	Mobile	Suburban	1993-1998	SO_2	0

Source: U.S. EPA, Office of Air Quality Planning and Standards, AIRS Database, 1997.

- Emissions sources for the Kansas City Ozone Maintenance Area. Emissions inventory for these sources is based on the 1997 EPA database.

- Major emissions sources within Johnson County. These data are based on the KDHE, Bureau of Air and Radiation 1997 database.

- Existing on-site emissions sources including sources that are operated by the Sunflower Army Ammunition Plant and the Koch Sulfur Products Company. This information is based on the KDHE, 1997 database. In anticipation of the transfer of Sunflower, Koch now has ceased operations at Sunflower.

- Major emission sources within the Kansas City Ozone Maintenance Area. Emissions inventory for these sources is based on the 1997 EPA database.

Exhibit III-38 presents County-wide emissions, and a comparison of the Johnson County emissions inventory with emissions inventories in other counties in Kansas (County-wide emissions ranking, average, maximum, and minimum County-wide emissions for each pollutant). Total emissions for the Kansas City Ozone Maintenance Area are also provided. Exhibit III-39 presents the emissions inventory for four major

EXHIBIT III-37
PSI REPORT FOR JOHNSON COUNTY, KANSAS AND THE KANSAS CITY OZONE MAINTENANCE AREA

	Annual Number of Days with a PSI Value	Percent of Days when Air Quality was...			PSI Statistics [a]		
		Good	Moderate	Unhealthful	Maximum	90th Percentile	Median
Johnson County, Kansas							
1993	54	100	0	0	41	34	22
1994	56	91	9	0	81	49	31
1995	48	94	6	0	63	46	25
1996	21	86	14	0	63	52	28
1997	51	98	2	0	61	38	24
Kansas City Ozone Maintenance Area [b]							
1993	303	86	14	0	--	--	--
1994	302	80	20	0	--	--	--
1995	298	79	21	0	--	--	--
1996	295	79	21	0	--	--	--
1997	301	84	16	0	--	--	--
1998 [c]	365	73	26	1	--	--	--

[a] Statistical measures of the PSI values for a county:
- Maximum = the highest daily PSI value in the year (e.g., during 1993 the highest daily PSI value was 41).
- 90th Percentile = 90 percent of daily PSI values during the year were less than or equal to the 90th percentile value (e.g., during 1993, 90 percent of daily PSI values was less than or equal to 34).
- Median = half of daily PSI values during the year were less than or equal to the median value, and half equaled or exceeded it (e.g., during 1993 half of daily PSI values were less than or equal to 22).

[b] All values for the Kansas City Ozone Maintenance Area are calculated as an average (i.e., average annual number of days with a PSI value; average percentage of days when air quality was good, moderate, unhealthful) for the five counties.

[c] Average calculated for Wyandotte, Clay, Jackson, and Platte counties. Johnson County figures not available for 1998.

Source: U.S. EPA, Office of Air Quality Planning and Standards, AIRS Database, 1997.

emissions sources in Johnson County and the top 13 major emissions sources in the Kansas City Ozone Maintenance Area. Exhibit III-40 presents a list of active sources at Sunflower, annual estimates of emissions for these sources, and contributions of emissions from these sources to total emissions for Johnson County and the Kansas City Ozone Maintenance Area.

EXHIBIT III-38
EXISTING EMISSIONS INVENTORY FOR JOHNSON COUNTY, KANSAS AND THE KANSAS CITY OZONE MAINTENANCE AREA

County	Existing Emissions Inventory (Tons/Year)				
	VOCs	NO_x	CO	SO_2	PM_{10}
Johnson County	21,336	25,149	103,623	2,021	36,684
County-wide Emissions Ranking [a]					
- ranking number	35/105	36/105	38/105	11/105	94/105
- percentile rank	66.7%	65.7%	63.8%	89.5%	10.5%
Average County-wide Emissions [a]	2,418	3,683	10,278	1,422	5,064
Minimum County-wide Emissions [a]	386	204	1,871	9	5,064
Maximum County-wide Emissions [a]	36,321	34,929	134,964	45,666	44,455
Kansas City Ozone Maintenance Area					
Total Emissions for the KC Air Quality Maintenance Area[b]	114,065	120,096	465,650	72,044	141,420

[a] Ranking, average, minimum and maximum County-wide values are based on emissions inventories for all 105 counties in Kansas.

Source: National Emission Trends Viewer, CD, 1985-1995, Version 1.0, September 1996, The U.S. EPA, Office of Air Quality Planning and Standards, Research Triangle Park, NC. Emissions provided in this table include County-wide emissions from all stationary and non-point emissions sources for 1995 (most recent available data). Emission Trends Viewer does not provide data on lead emissions or hazardous air pollutants (HAPs).

[b] Source: U.S. EPA, Office of Air Quality Planning and Standards, AIRS database, 1997.

EXHIBIT III-39
MAJOR EMISSIONS SOURCES IN JOHNSON COUNTY, KANSAS AND THE KANSAS CITY OZONE MAINTENANCE AREA

Name	Location	Existing Emissions Inventory (Tons/Year)				
		VOCs	NO_x	HAPs [a]	SO_2	PM_{10}
Johnson County, Kansas						
Marley Cooling Tower Co.	Olathe	0	0	45	0	0
Koch Sulfur Products Co.	DeSoto	0	5	0	1,163	1
AFG Industries, Inc.	Spring Hill	0	1,345	0	128	0
Vita Craft Corporation	Shawnee	22	0	22	0	117
Total Emissions from All Major Sources	Johnson County	22	1,350	67	1,291	118
Contribution of All Major Sources to Total County-wide Emissions (in percent) [b]	Johnson County	0.1%	5.4%	N/A [c]	63.9%	0.3%
Kansas City Ozone Maintenance Area						
Ford Motor Co.	Clay County	2,577	134	N/A	6	55
GST Steel Corp.	Jackson County	104	717	N/A	390	343
Independence Power & Light	Jackson County	3	272	N/A	1,868	28
Kansas City Power & Light	Jackson County	42	8,877	N/A	4,816	364
Lafarge Corp.	Jackson County	8	1,237	N/A	1,729	557
Missouri Public Service Co.	Jackson County	72	22,270	N/A	11,016	82
Trigen-KC Dist. Energy Corp.	Jackson County	2	314	N/A	3,083	5
AFG Industries, Inc.	Johnson County	0	1,345	45	128	0
Koch Sulfur Products Co.	Johnson County	0	5	0	1,163	1
Board of Public Utilities - Kaw	Wyandotte County	4	706	N/A	725	40
Board of Public Utilities - Nearman	Wyandotte County	31	3,682	N/A	6,625	217
Board of Public Utilities - Quindaro	Wyandotte County	25	3,211	N/A	15,457	257
General Motors Corp.	Wyandotte County	1,326	54	N/A	15	51
Total Emissions from Top 13 Major Sources	Johnson and Wyandotte Counties, KS / Clay and Jackson Counties, MO	4,194	42,825	N/A	47,021	1,999
Total Emissions from All Major Sources	Johnson and Wyandotte Counties, KS and Clay, Jackson, and Platte, MO	6,587	53,246	N/A	66,480	4,271

[a] HAPs = Hazardous Air Pollutants
[b] Total County-wide emissions are presented in Exhibit III-38.
[c] N/A = not available

Source: KDHE, Bureau of Air and Radiation, 1997 Annual Emissions Inventory; U.S. EPA, Office of Air Quality Planning and Standards, AIRS Database, 1997.

EXHIBIT III-40
EMISSIONS INVENTORY FOR THE EXISTING ON-SITE EMISSIONS SOURCES

Source Description	Existing Emissions Inventory (Tons/Year)				
	VOCs	NO_x	CO	SO_2	PM_{10}
Sunflower Army Ammunition Plant					
Two natural gas-fired boilers (maximum firing rate-14.65 MMBTU/hr each, operating schedule-2,080 hrs/yr)	0.2	2.8	2.3	0.02	0.2
Two oil-fired water pumps (575 horsepower each, annual fuel oil consumption of 1250 gallons/year each, operating schedule-2,080 hrs/yr)	0.1	0.8	0.2	0.1	0.1
Single-chamber fuel-oil (grade no.2) fired incinerator used for processing of industrial solid waste (processing capacity - 600 lbs of waste per hour, fuel oil consumption of 2350 gallons/year, operating schedule-47 hours/yr)	0.2	0.7	0.2	0.1	0.2
Total (Sunflower Army Ammunition Plant)	0.5	4.3	2.7	0.2	0.5
Koch Sulfur Products Company					
Natural gas-fired auxiliary boiler (maximum firing rate-10.5 MMBTU/hr)	0.1	4.5	3.8	0.03	0.3
Diesel fuel generator (maximum firing rate-6.56 MMBTU/hr)	0.003	0.2	0.6	0.1	0.02
Absorber stack	0	0	0	1,153.4	0
Fuel oil storage tank	negligible	0	0	0	0
Sulfuric acid storage tanks	0	0	0	4.6	0
Sulfuric acid storage operations	0	0	0	4.6	0
Fugitive emissions	0	0	0	0	1.0
Total (Koch Sulfur Products Company)	0.1	4.7	4.4	1,162.7	1.3
Grand Total (All Existing On-site Emissions Sources)	0.6	9.0	7.1	1,162.9	1.8
Contribution of All Existing On-site Emissions Sources to Total County-wide Emissions [a] (in percent)	0.003%	0.04%	0.01%	57.5%	0.005%
Contribution of All Existing On-Site Emissions Sources to Total Emissions in the KC Air Quality Maintenance Area [b] (in percent)	0.00001%	0.0001%	0.00003%	0.03%	0.00002%

[a] Total County-wide emissions are presented in Exhibit III-38.

[b] Total emissions for the Kansas City Ozone Maintenance Area are presented in Exhibit III-38.

Source: KDHE, Bureau of Air and Radiation, 1997 Annual Emissions Inventory; EPA, AP-42 Compilation of Air Pollutant Emissions Factors, March 1998, Section 1.4 Natural Gas Combustion; EPA, AP-42 Compilation of Air Pollutant Emissions Factors, October 1996, Section 3.3 Gasoline and Diesel Industrial Engines; Source: EPA, AP-42 Compilation of Air Pollutant Emissions Factors, October 1996, Sections 2.1 Refuse Combustion, and 3.3 Gasoline and Diesel Industrial Engines.

9. Noise

a. Noise Background

Noise is generally defined as loud, unpleasant, unexpected or undesired sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day and the type of activity during which the noise occurs, and the sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations, which travel through a medium, such as air, and are sensed by the human ear. Sound is generally characterized by a number of variables including frequency and intensity. Frequency describes the sound's pitch and is measured in Hertz (Hz), while intensity describes the sound's loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale. A sound level of 0 dB is approximately the threshold of human hearing and is barely audible under extremely quiet listening conditions. Normal speech has a sound level of approximately 60 dB. Sound levels above about 120 dB begin to be felt inside the human ear as discomfort and eventually pain at still higher levels. The minimum change in the sound level of individual events that an average human ear can detect is about 3 dB. A change in sound level of about 10 dB is usually perceived by the average person as a doubling (or halving) of the sound's loudness, and this relation holds true for loud sounds and for quieter sounds.

Because of the logarithmic nature of the decibel unit, sound levels cannot be added or subtracted directly and are somewhat cumbersome to handle mathematically. However, some simple rules of thumb are useful in dealing with sound levels. First, if a sound's intensity is doubled, the sound level increases by 3 dB, regardless of the initial sound level. Thus, for example:

60 dB + 60 dB = 63 dB; and
80 dB + 80 dB = 83 dB.

Hertz is a measure of how many times each second the crest of a sound pressure wave passes a fixed point. For example, when a drummer beats a drum, the skin of the drum vibrates a number of times per second. A particular tone which makes the drum skin vibrate 100 times per second generates a sound pressure wave that is oscillating at 100 Hz, and this pressure oscillation is perceived as a tonal pitch of 100 Hz. Sound frequencies between 20 Hz and 20,000 Hz are within the range of sensitivity of the best human ear.

Sound from a tuning fork (a pure tone) contains a single frequency; however, most sounds one hears in the environment do not consist of a single frequency, but rather a broad band of frequencies differing in sound level. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound according to a weighting system that reflects that human hearing is less sensitive at low frequencies and extremely high frequencies than at the mid-range frequencies. This is called "A" weighting, and the decibel level measured is called the A-weighted sound level (dBA). In practice, the level of a noise source is conveniently measured using a sound level meter that includes a filter corresponding to the dBA curve.

Although the A-weighted sound level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that create a relatively steady background noise in which no particular source is identifiable. A single descriptor called the L_{eq} (equivalent sound level) is used. Leq is the energy-mean